

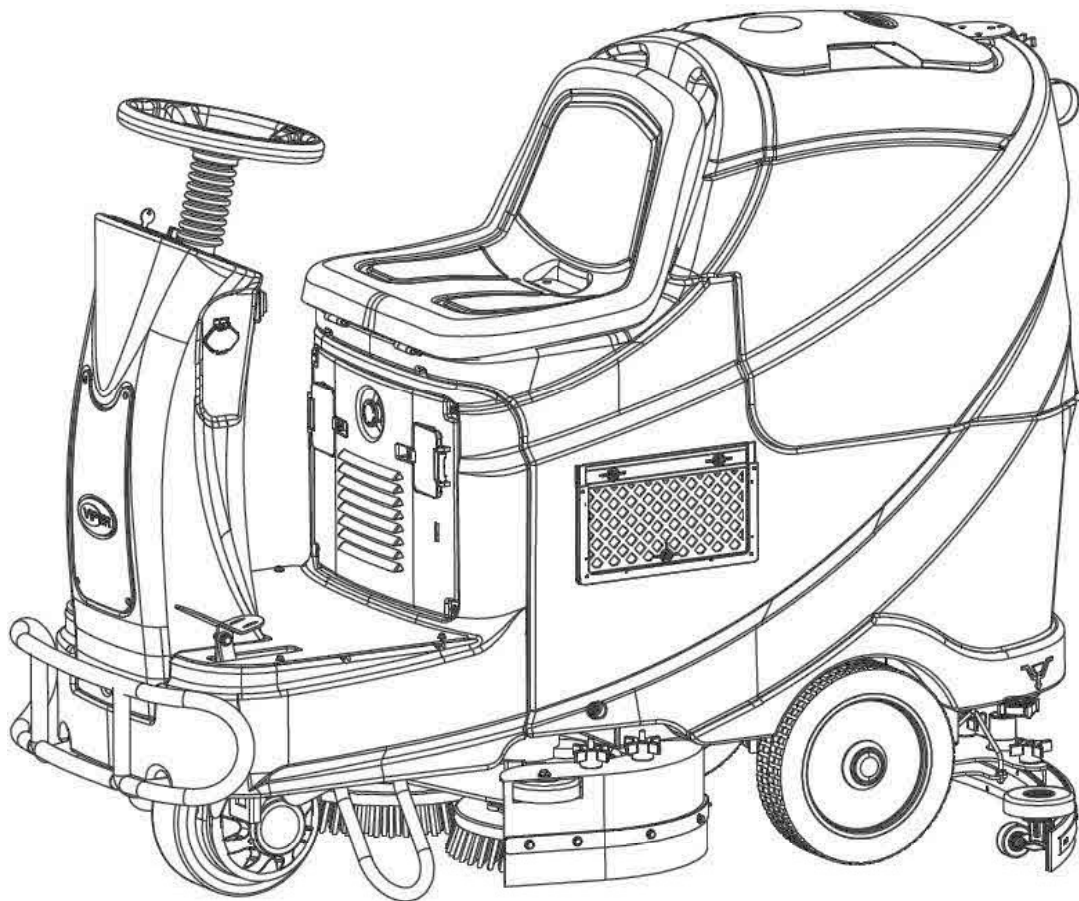


Ride-on Scrubbers

USER MANUAL

READ USER MANUAL CAREFULLY BEFORE USE

Please fill out & return your warranty card



Model # _____

Serial No.# _____

VIPER...exceptional value
VR10029US REV.06
2019-8-21

Machine description

Machine structure

A1 --Seat (with Safety button)

A2 -- Recovery tank lid

A3 -- Recovery tank

A4 -- Solution tank

A5 -- Squeegee

A6 -- Adjust nut of brush skirt

A7 -- Brush skirt

A8 -- Brushes

A9 -- Drive motor

A10--Foot pedal of brush lift or low

A11--USB port for phone charging

A12--Front housing

A13--Control panel

A14--Steering wheel

A15--Emergency-stop button

A16--Net bag

B1 -- Squeegee angle adjustment knob

B2 -- Squeegee fixing knob

B3 -- Vacuum hose inlet

B4 -- Rear squeegee latch

C1 -- Drain hose

C2 -- Recovery tank turn latch

C3 -- Charging cable storage

C4 -- Clean water inlet

C5 -- Squeegee lift lever

C6 -- Drive pedal

C7 -- Water level sight tube

C8 -- Batteries

D1 -- Drain cover

D2 -- Water valve

D3 -- Filter

E1 -- LED display

E2 -- Recovery tank full indicator

E3 -- The brush on/off button

E4 -- Drive motor indicator

E5 -- Key switch

E6 -- Speed potentiometer

E7 -- Forward/reverse button

E8 -- Clean water flow control button

E9 -- Horn

E10--Solution tank empty indicator

E11--Battery capacity indicator

F1 -- Charging port

F2 -- Charging LED indicator

F3 -- Circuit breaker

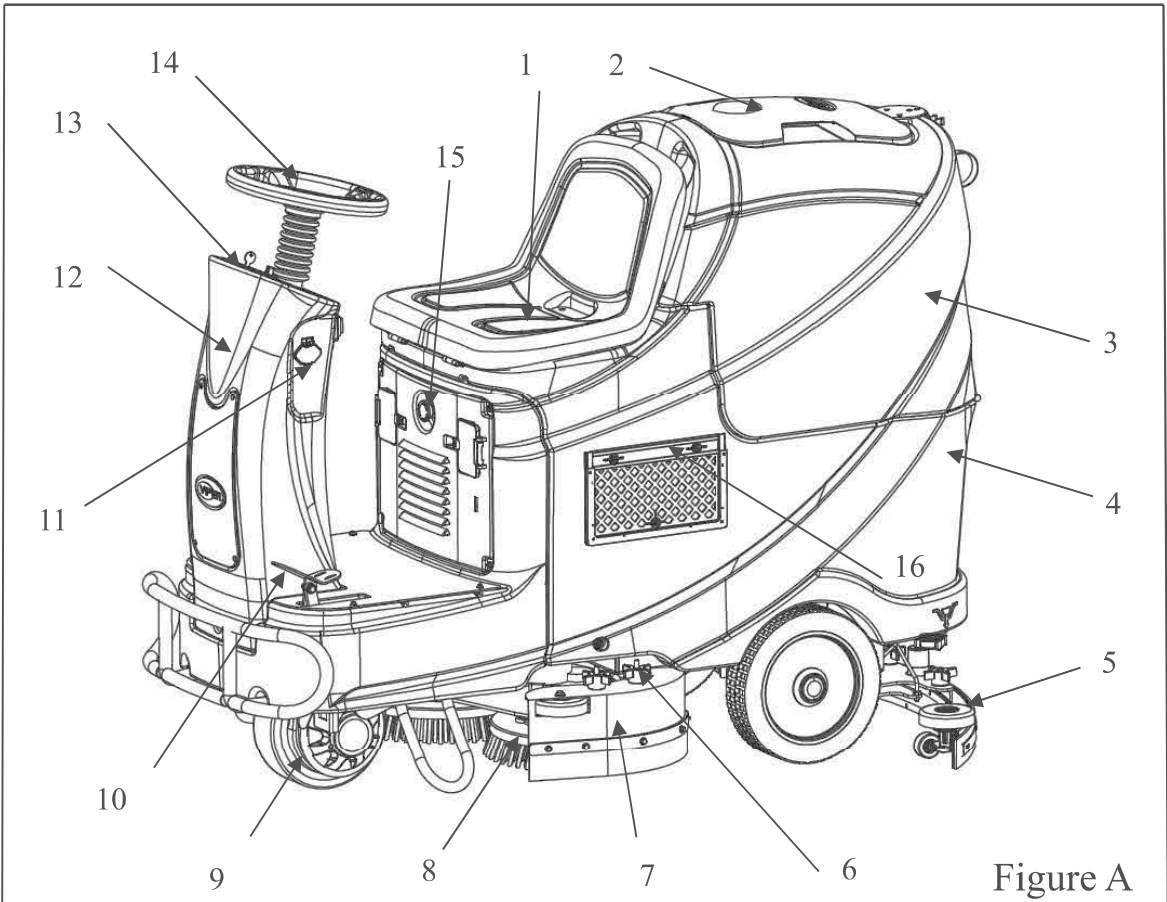


Figure A

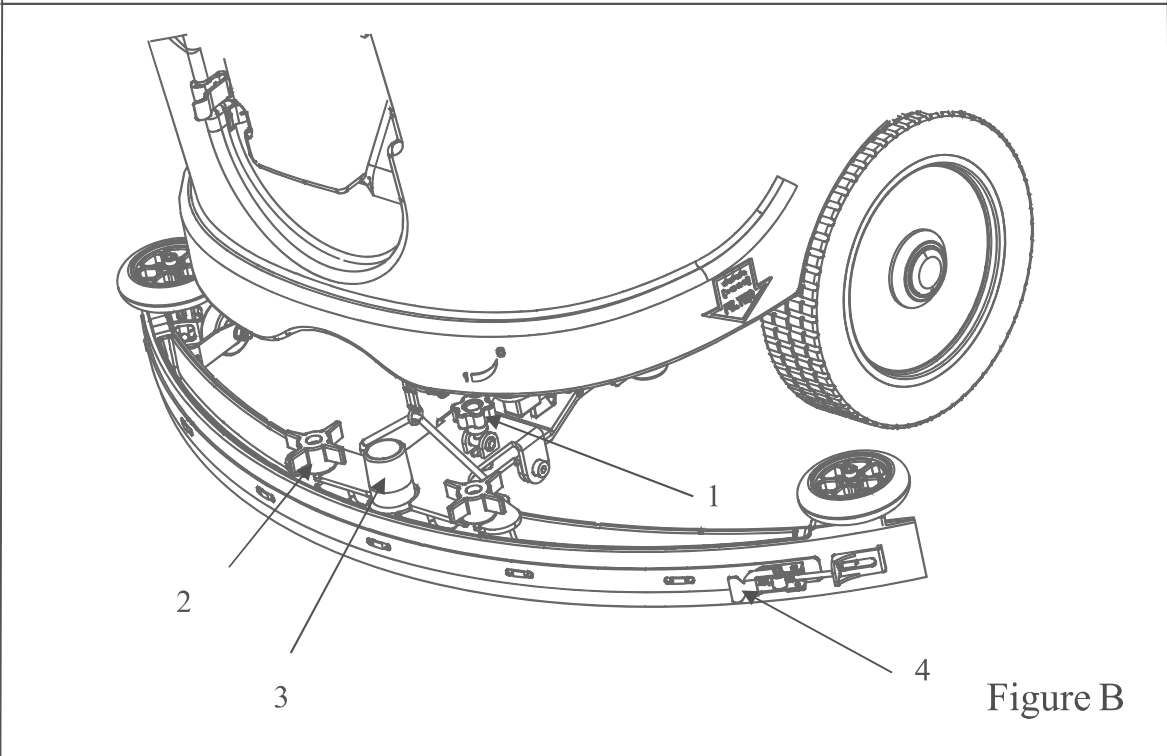


Figure B

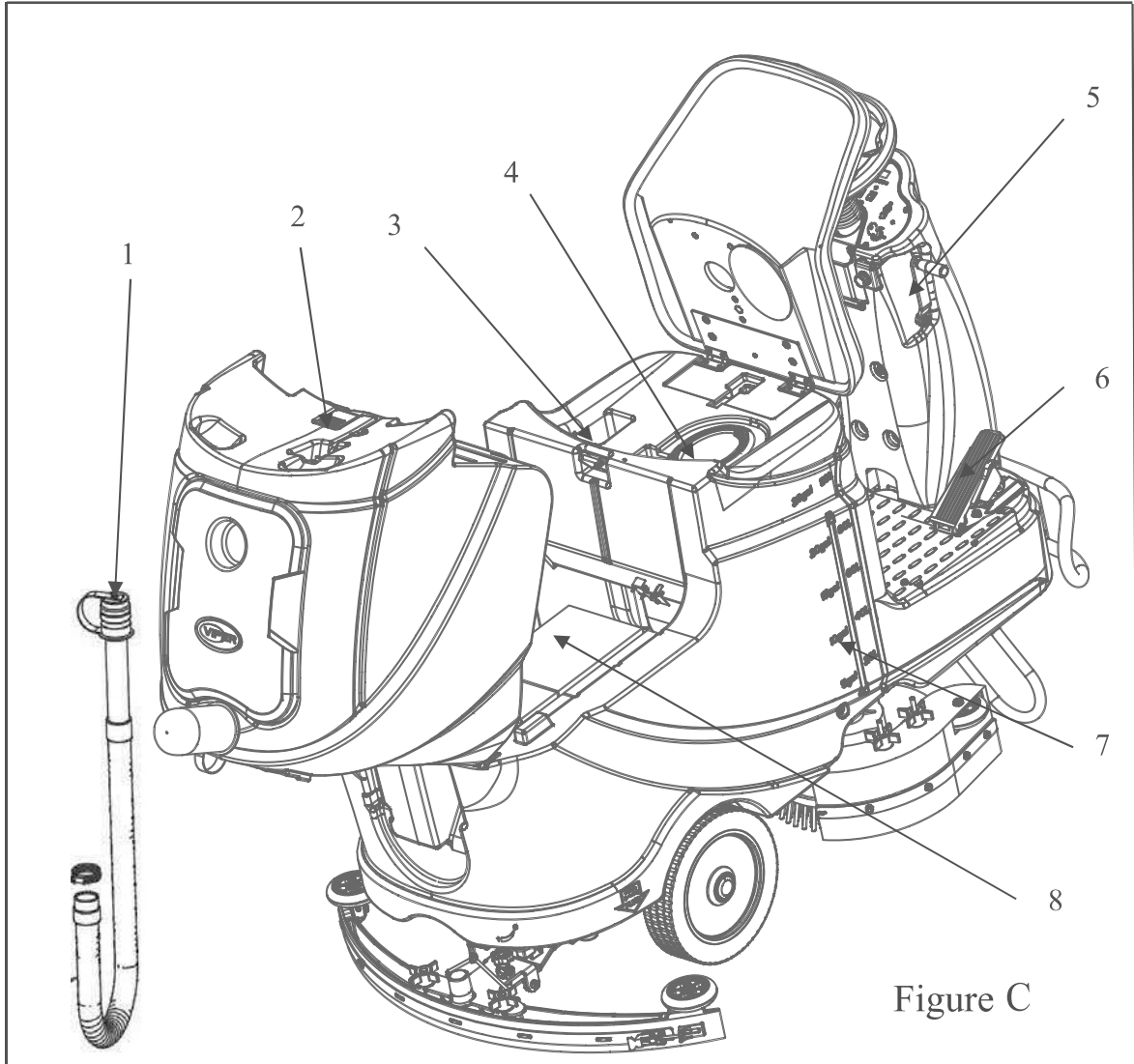


Figure C

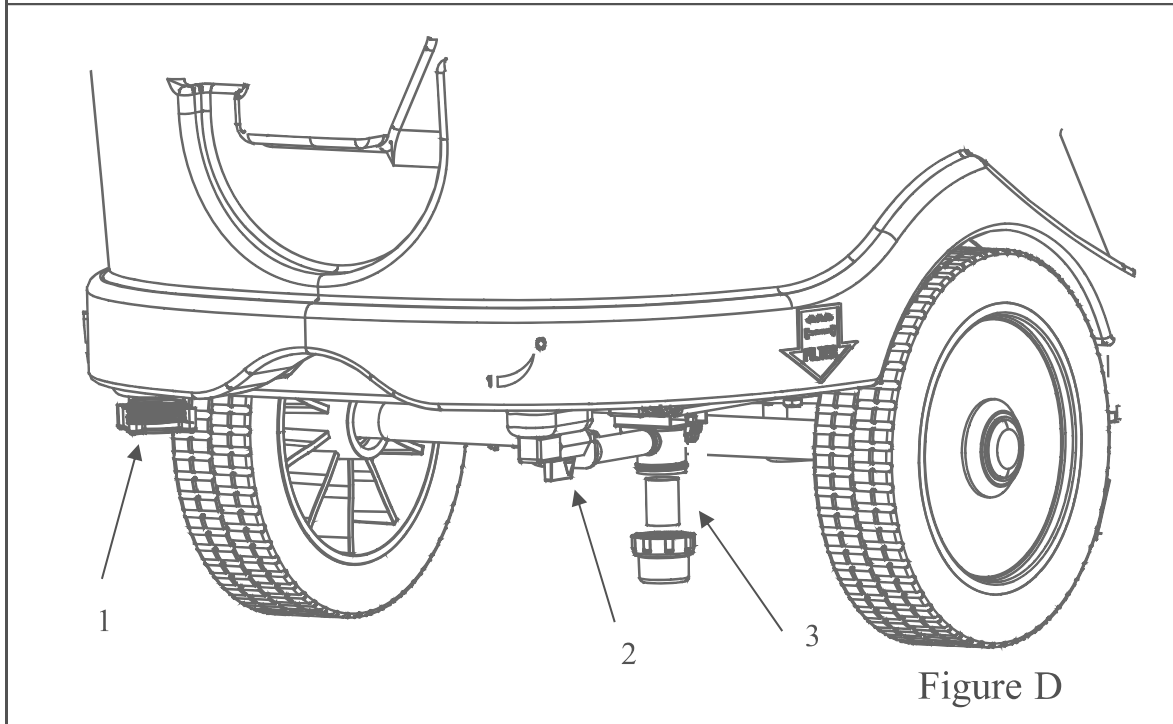


Figure D

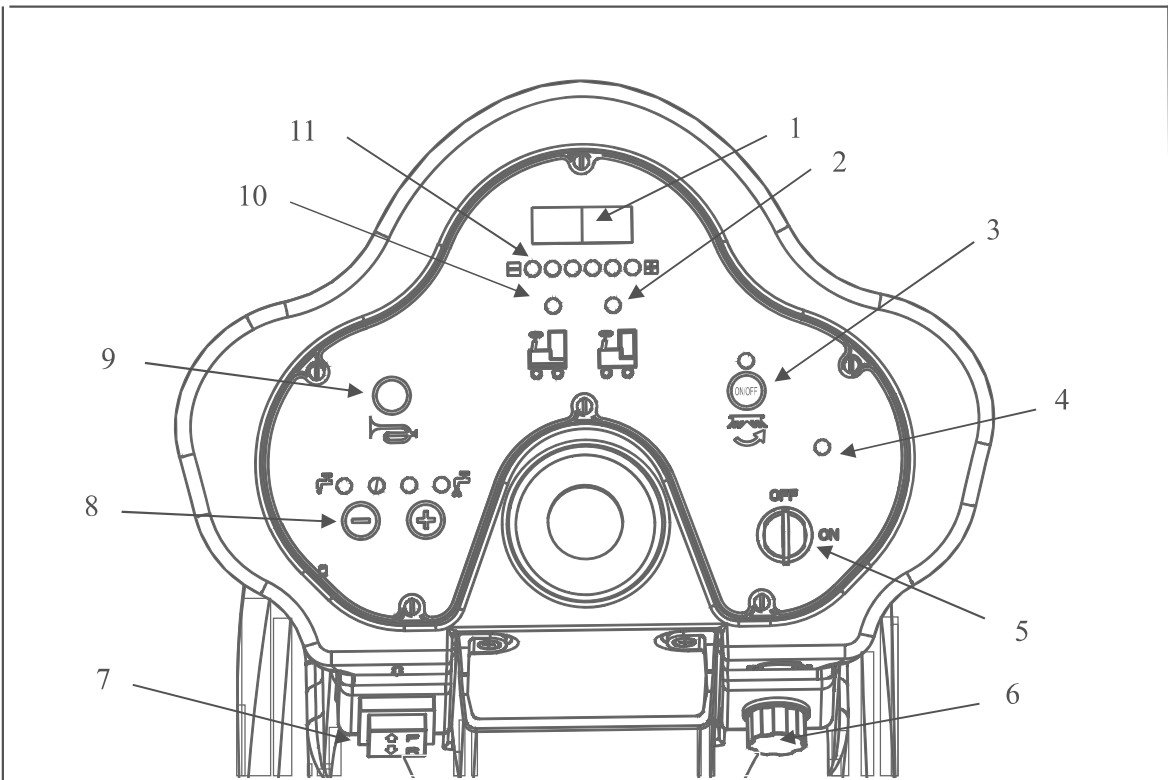


Figure E

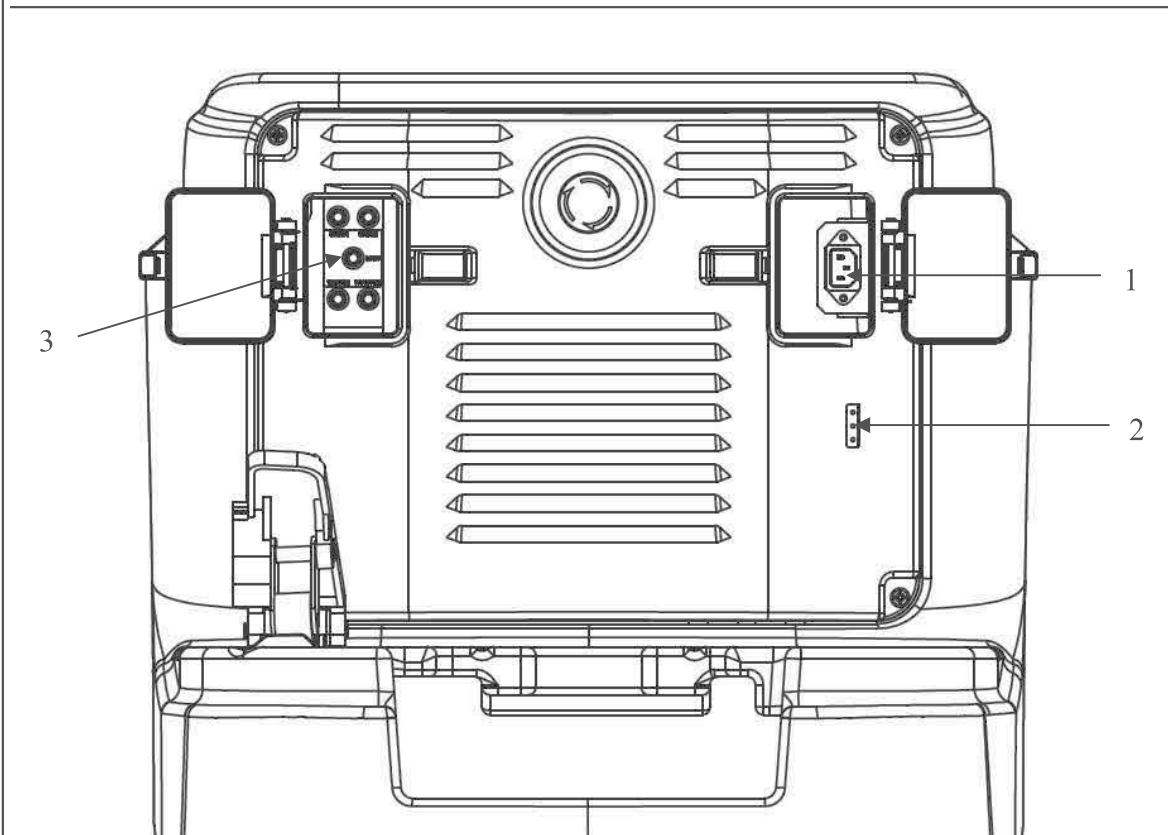


Figure F



SAFETY PRECAUTIONS

This machine is intended for commercial use. It is constructed for use in an indoor environment and is not intended for any other use. Use only with recommended accessories.

All operators shall read, understand and exercise the following safety precautions:

1) DO NOT OPERATE MACHINE:

- Unless trained and authorized.
- Unless you have read and understand the user manual.
- In flammable or explosive areas.
- If not in proper operating condition.
- In outdoor areas.

2) BEFORE OPERATING MACHINE:

- Make sure all safety devices are in place and operate properly.

3) WHEN USING MACHINE:

- Go slow on inclines and slippery surfaces.
- Follow all safety guidelines.
- Be very careful when using the machine in reverse.
- Report and repair any damage to machine prior to operating it.

4) BEFORE LEAVING OR SERVICING MACHINE:

- Never park the machine on a slope.
- Turn machine off.

5) WHEN SERVICING MACHINE:

- Read user manual thoroughly prior to operating or servicing this machine.
- Use manufacturer supplied or approved replacement parts.
- Use approved jack or hoist to safely elevate the machine.
- Disconnect batteries prior to working on machine.
- Wear gloves when handling batteries or battery cables.
- Avoid moving parts. Do not wear loose fitting clothing while servicing machine.

6) SAFETY DEVICES

- Emergency-stop button(A15)
When the Emergency-stop button is pressed, the machine will come to a sudden stop, and all machine functions and displays will stop. Twist the button clockwise slightly to reset it.
- Seat safety button (inside A1).
If the operator leaves the seat during operation, the drive motor will shut off in 0.5 seconds. The LED screen displays STOP.



WARNING Indicates a potential risk of injury or dangerous situation with risk of death for the operator.



NOTED Indicates a remark related to important or useful functions.

MACHINE SET UP & INSTALLATION

UNPACKING MACHINE

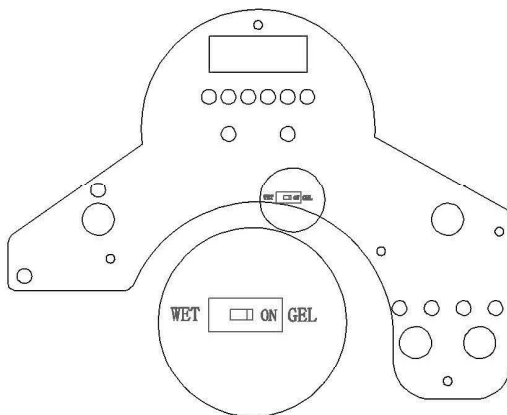
Be sure and check packing carton for any damage. Report immediately any damage to carrier. Check contents of package to ensure that the following items are included:

- 1, Machine
- 2, Squeegee assembly
- 3, Brush assembly(x2)
- 4, User manual
- 5, Battery charger (If equipped)
- 6, Batteries (x4) (If equipped)
- 7, Connecting wire for battery and charger (If equipped)
- 8, Warning lamp (If equipped)
- 9, Bumper bracket(If equipped)

BATTERY CONNECTIONS

1. Turn off the key switch (E5).
2. Flip the seat (A1) to the open position, use the latch (C2) and open the battery compartment. If the machine does not include batteries, contact your distributor for recommended batteries.

After selecting batteries, please choose WET or GEL mode with toggle switch on the back of PCB, as shown in the figure below.



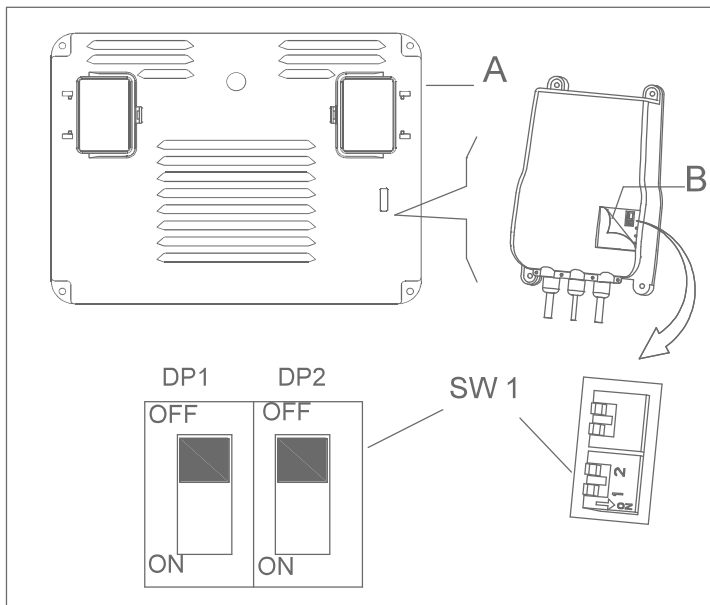
DIP Switch	Battery type
On	GEL or AGM
Off	WET

Battery Charging Curve Set Up



Do not to set charger unless you have professional training

1. Turn off the machine and disassemble the control cover (A) from the machine. Then pry open the label on the charger cover (B). you will find the 2 sets of dipswitches (SW1 and SW2) in the charger.
2. Only the set of dip switch SW1 (the one on the left side) has effect on charging curve selection accordingly to the table below.



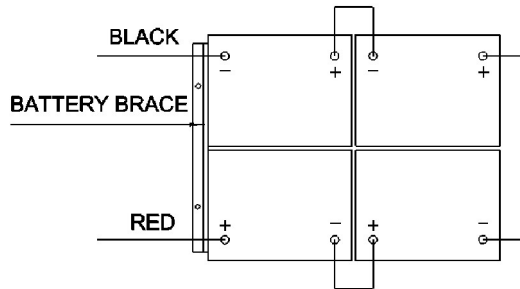
Battery mode set up method of the charger.

DIPSWITCH: SW1 (ONLY FOR)

DP1	DP2	CHARGING CURVE
ON	OFF	IUIa-ACD for Lead-acid (Wet) batteries
OFF	OFF	IUIa-GEL for Gel batteries of Exide-Sonnenschein
OFF	ON	IUU0-GEL for HAZE Gel and AGM batteries of other manufacturers
ON	ON	IUIUa-AGM for Discover AGM batteries

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3. Carefully place the four batteries into the compartment as shown in figure below. Place the battery brace at the front of the four batteries.
4. Connect battery cables to posts in numbered order as shown in the figure below.



5. Apply a coat or protective spray on the cable connections to prevent battery corrosion.
6. Cover recovery tank and seat.



Make sure the recovery tank is empty when opening it.



Do not drop batteries into compartment. Do not put metal on the batteries.



Never connect + to +, or - to - , never connect + to - with single battery, when disassembling or installing the batteries.

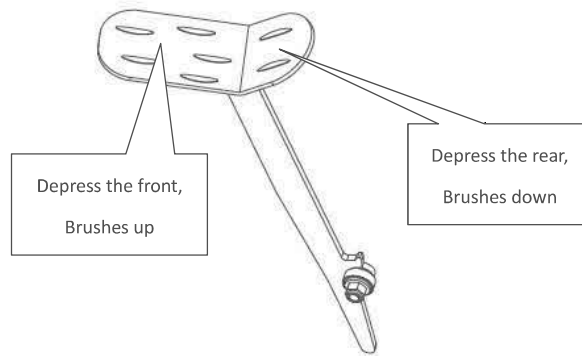
MACHINE SET UP

PRE-OPERATION CHECKS

1. Sweep or dust mop the surface to be cleaned.
2. Check battery meter to make sure batteries are fully charged. (see BATTERY CHARGING)
3. Check that brush / pad is properly installed.
4. Check that squeegee is properly installed.
5. Check the Drive Motor (A9) to see if is working normally.
6. Make sure the recovery tank is empty. If not, drain it.
7. Make sure solution tank water indicator (E10) is not on. If on, fill water in solution tank (A4).
8. Check that the water valve (D2) is not indicated "0".

INSTALLING PAD DRIVER OR BRUSH

1. Ensure that the machine is turned off (E5).
2. Raise the brush head (A7) off the floor by depressing the front of foot pedal (A10) on the left of machine.
3. Put brushes (A8) below both brush driver motor hub.
4. Lower the brush deck (A7) by depressing the rear of foot pedal (A10). While sitting on the machine, turn on the brush switch (E3) to insure the speed control knob (E4) is set to minimum. Lightly depress driver pedal (C6), and the brush motors will turn on. The brushes should attach to the machine automatically.



5. Adjust the nut (A6) to properly position the splash guards.



Never work without the brusher/pad perfectly installed.



When cleaning or replacing the brushes, you should raise the brush head and rotate the reverse direction to “working” direction quickly. The two brushes are reverse in direction.

INSTALLING AND ADJUSTING THE SQUEEGEE

1. Ensure that the machine is turned off (E5).
2. Turn the squeegee lift lever (C5) to put down the squeegee bracket (A5) on floor.
3. Loosen the two knobs (B2) on the squeegee and slide the squeegee into the slots in the back of the squeegee bracket.
4. Tighten the knobs(B2) securely.
5. Secure the vacuum hose (B3) on the pick-up tube of the squeegee.
6. Adjusting the nut (B1) to properly set the squeegee angle.

FILLING THE SOLUTION TANK

1. The solution fill hose is under the seat(C4).
2. Do not overfill the solution tank. Leave at least two inch from the opening of tank.
3. Water temperature should not exceed 40° C/104° F.



Use only low-foam and non-flammable detergents suitable for ride-on scrubber applications.



Each time that you need to fill the solution tank, always empty and clean the recovery tank by removing the drain hose plug (C1). After each use, unscrew the drain cap (D1) to drain solution tank.

CHECKING THE SPEED DRIVER

1. Sit on seat (A1) of the machine.
2. Turn on the key switch (E5).

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3. Lightly depress the driver pedal (C6) to move and release it checking the machine forward or stop.
4. For more security, you need to press the Emergency-stop button (A15) to make the machine come to a sudden halt to check that the button is working, when you use the machine for the first time. Release it by turning.
5. If the drive motor error indicator (E4) is on, see ERROR INFORMATION



The gradient in the direction of travel should not exceed (10) %.



When normal circumstances, the brake on the drive motor is applied. When all of the safety system are “go”, and the drive pedal is depressed, the brake will release and the machine will move.

In special circumstances (dead batteries, no batteries or major malfunction), the brake can be manually released so the machine can be pushed. Pull the brake bracket out (it will only move about 1/4 inch) and use an allen wrench or screw driver as a wedge to hold the bracket out.



MACHINE OPERATION



Do not operate machine unless you have professional training. You have read and understand this manual before operate machine.

1. You should sit on the seat of the machine when you operate it.
2. Lower squeegee assembly to the floor.



Make sure to raise the squeegee before the machine is moving backward, or machine stops and LED screen displays ERR-01.

3. Lower the brush head to the floor.



Turn off the brush switch before raising the brush deck to prevent water from spraying out. Turn off brushes and raise the brush deck before going in reverse. Avoid running the brushes when the machine is not moving damage to the floor can occur.

4. Turn on the key switch.(E5)

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5. Turn on the brush motor switch.(E3)
6. Depress the driver pedal slowly (C6) and hold steering wheel (A14) to go forward. The speed can be controlled by a dial (E6), turning left decreases speed, and turning right increases speed. To use reverse, press the direction switch (E7).
7. Adjust amount of solution flow by pressing the solution/water adjustment button. (D5)
8. As long as you turn on the key switch (E5), you can charge the cell-phone through the USB charging interface (A11).
9. You may press the horn (E9) to alert others.



Flammable materials can cause an explosion or fire. Do not use flammable materials in tanks or use machine in areas where flammable materials are present.



When battery indicator is red and flashing, do not continue to operate the machine; otherwise, this will cause harm to the batteries or machine. Recharge batteries.



Regularly view the sight tube (C7). If the solution tank runs empty, turn off the brush switch, solution switch and raise the brush head. Keep the squeegee down and continue to vacuum until all dirty water is picked up.



Regularly view the filter (D3) and clean it by unscrewing the transparent cover, and removing the filter screen rinse out the screen and re-assemble the filter.



If the squeegee assembly leaves streaks on the floor, raise the squeegee off the floor and wipe the blades down with a damp cloth.



Do not use your fingers to wipe or remove debris from the blades, as injury may occur.



The two brush motors \vacuum motor \drive motor\control circuit are equipped with an overload protector (F3), which protects them from being overloaded. If overload protector trips, it can't be reset immediately. You must first determine what caused the breaker to trip, and allow the motor to cool down before you can reset the breaker.

BATTERY CHARGING



Please use approved chargers to charge the batteries, if the machine is not equipped with on-board battery charger.



For good machine performance, always keep batteries charged at all times. Do not let them be in an over-discharged condition.



When charging the machine, make sure the transparent cover is open.

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Charge the batteries when the red indicator (E11) is on.



Batteries emit hydrogen. Explosion or fire can result from hydrogen. Keep sparks and open flames away! It is recommended to push the button(C2) to turn recovery tank open before charging.

1. Charge the machine in a well-ventilated area.
2. Turn machine off (E5).
3. Plug approved charger into grounded wall outlet. Open transparent cover (A9), and then connect the charging cable to the machine socket (F1).
4. The charger will automatically begin to charge the batteries.
5. Check that the battery charging is complete. Charging indicator (F2) is green.
6. Upon completion of charging, first unplug the charger from the wall outlet, and then disconnect the charger from the machine.
7. Store the charging cable under the seat (C3).



Check battery connections for wear and loose terminals. Replace if necessary.

MACHINE STORAGE

If the machine is not going to be used for more than 30 days, please proceed with the following actions:

1. Perform the “After each use” maintenance procedures. (See Maintenance section).
2. Raise brush and squeegee.
3. Store machine in a clean, dry and flat place. If storage in an area that may reach freezing temperatures, be sure to drain all fluids from the machine prior to storage. Any damage caused by freezing will void the warranty.

MAINTENANCE



Maintenance procedures must be performed with the machine turned off and battery charger cable disconnected.



All maintenance procedures must be performed by qualified personnel, or by authorized Service Center. This Manual describes only the most common maintenance. For additional maintenance procedures, contact your local Service Center.

SCHEDULED MAINTENANCE TABLE

Procedure	After each use	Weekly	Every six months	Annually
Battery charging				
Clean Squeegee				
Clean Brush/Pad				
Clean Tank and vacuum grid with float, cover gasket check				
Squeegee blade check and replacement				
Recovery filter cleaning				
Clean solution filter				
Screw and nut tightening check			(1)	
lubricate moving parts			(1)	
Brush/Pad-holder motor carbon brush check or replacement				(2)
Vacuum system motor carbon brush check or replacement				(2)
Drive motor check or replacement				(2)

(1) And after the first 8 working hours.

(2) This maintenance procedure must be performed by an authorized Service Center.

SQUEEGEE CLEANING AND BLADE REPLACEMENT



For optimal performance, the squeegee blades must be clean, dry and undamaged. If damaged, replace it.

1. Unscrew the knob (B2) to remove squeegee.
2. Unscrew the left and right knob to relax the front clamp, replace the front blade.
3. Disengage the retainers (B4) and remove the rear clamp, replace the rear blade.
4. Install the blades in the reverse order to removal.
5. Install the squeegee to screw the knob (B2).

LED SCREEN DISPLAY INFORMATIONS

- STOP** **Machine doesn't move and brush doesn't work, vacuum motor can work**
- 00012.3** **Machine run hours is 12.3hours**
- L0-18** **Batteries voltage is lower than 18V**
- U-25.5** **Batteries voltage is 25.5V**
- ERR-01** **Squeegee is down and the machine is in reverse**

DRIVE MOTOR ERROR INDICATOR INFORMATION

LED FLASH CODES EXAMPLE, 𐄂 𐄂𐄂𐄂 means LED flash 2 times, after several seconds LED flash 4 times.

LED is always light in normal work.

	LED FLASH CODES	DESCRIPTION
1.1	𐄂 𐄂	Overheating >92 °C, motor overload
1.2	𐄂 𐄂𐄂	Accelerator malfunction
1.3	𐄂 𐄂𐄂𐄂	Speed limiter potentiometer malfunction
1.4	𐄂 𐄂𐄂𐄂𐄂	Under-voltage malfunction
1.5	𐄂 𐄂𐄂𐄂𐄂𐄂	Overvoltage malfunction
2.1	𐄂𐄂 𐄂	Principal contactor actuator opening failure
2.2	𐄂𐄂 𐄂𐄂	Principal contactor bond
2.3	𐄂𐄂 𐄂𐄂𐄂	Principal contactor malfunction, faulty electrical brake coil
2.4	𐄂𐄂 𐄂𐄂𐄂𐄂	Principal contactor actuator closing failure
3.1	𐄂𐄂𐄂 𐄂	Accelerator potentiometer malfunction
3.2	𐄂𐄂𐄂 𐄂𐄂	Brake activation malfunction
3.4	𐄂𐄂𐄂 𐄂𐄂𐄂𐄂	Brake deactivation malfunction
3.5	𐄂𐄂𐄂 𐄂𐄂𐄂𐄂𐄂	HPD malfunction(incorrect regulation of accelerator potentiometer)
4.1	𐄂𐄂𐄂𐄂 𐄂	Motor short circuit
4.2	𐄂𐄂𐄂𐄂 𐄂𐄂	Incorrect motor voltage/short circuit in motor
4.3	𐄂𐄂𐄂𐄂 𐄂𐄂𐄂	EEPROM malfunction
4.4	𐄂𐄂𐄂𐄂 𐄂𐄂𐄂𐄂	Short circuit in motor/EEPROM error

USER MANUAL

Parameter

Model	AS710R	AS850R
Machine length/width/height	62*30*48inch	62*35*48inch
Solution tank capacity	31gal	31gal
Recovery tank capacity	31gal	31gal
Rear wheels diameter	11.8inch	11.8inch
Brush motor power	2x0.4HP	2x0.4HP
Vacuum motor power	0.67HP	0.67HP
Drive motor power	0.67HP	0.67HP
Max. driver speed	3.7 miles/h	3.7 miles/h
Sound level	69db(A)	69db(A)
Batteries compartment size	23.2x15.4x13.7inch	23.2x15.4x13.7inch
Batteries spec	4x245AH AGM	WET or AGM
Working capacity, up to	70inch H ₂ O	70inch H ₂ O
Cleaning productivity (Theoretical)	47,500sq.ft/h	55,218sq.ft/h
Squeegee width	37inch	41.7inch
Brush diameter	2*14inch	2*16inch
Brush rpm	204rpm	204rpm
Charger	24V 25A	24V 25A
Machine weight	496lbs	506lbs
Machine weight(gross)	958lbs	968lbs
Carton spec	68*32*55.5inch	68*35.4*55inch
USB charger spec	5V, 0.8A	5V, 0.8A
Gradient	10%	10%
Brush deck width	29.1inch	33.5inch

Water Flow		
Indication LEDs	Solenoid Valve	Average Water Flow (L/min)
1 LED ON	2S ON 4S OFF	1.4
2 LEDs ON	3S ON 3S OFF	2.1
3 LEDs ON	4S ON 2S OFF	2.8
4 LEDs ON	ON	4.2

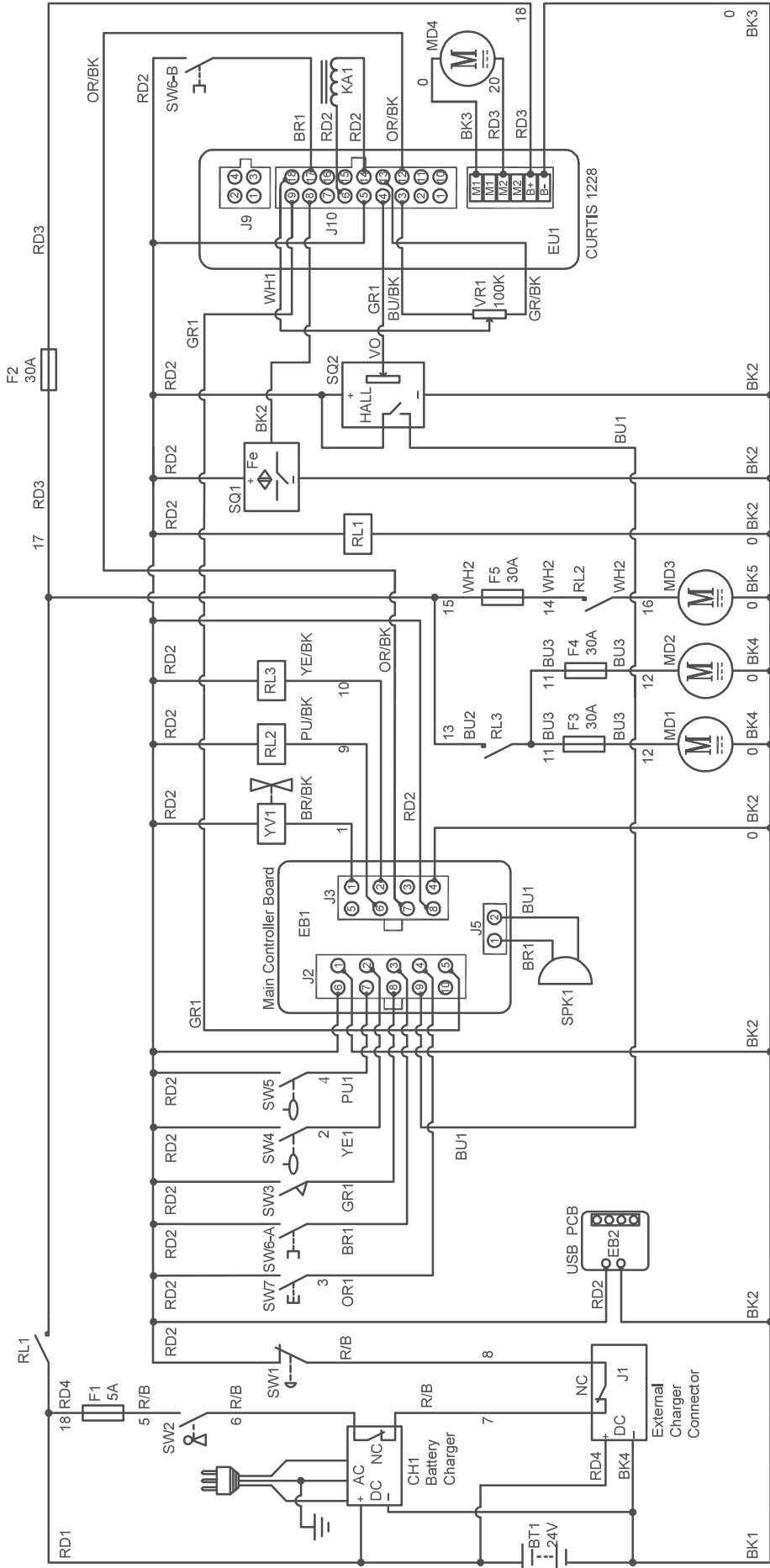
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TROUBLESHOOTING

Trouble	Possible Cause	Remedy
The machine does not work, LED screen (E1) does not turns on	The battery connector is disconnected	Connect.
	The batteries are completely discharged	Charge the batteries
The machine does not work, indicator light (E11) is red	The batteries are discharged	Charge the batteries
The machine does not move forward or backward	The PCB or key board is broken	Change the PCB or key board
	Emergency-stop button(A15) is not released	Turn and release
	Seat limit switch is not activated.	Sit on the seat of machine
	Squeegee is not lifted in reverse, LED screen (E1) display ERR-01	Lift the squeegee
Brush motor does not work, indicator light does not turns on	The PCB or key board is broken	Change the PCB or key board
	The deck motor is overloaded	Use less aggressive brushes suitable for the floor to be cleaned, reset the breaker
	There are foreign materials preventing the brush from rotating	Clean the brush hub
Drive motor does not work	Error indicator (E4) is lit	Refer to ERROR INFORMATION
	Drive motor is overloaded	Check the drive motor, reset the breaker
Vacuum system motor does not work	The recovery tank is full, light(E2) is red	Empty the recovery tank
	The vacuum motor is overloaded	Check the vacuum motor, reset the breaker
	The PCB or key board is broken	Change the PCB or key board
The dirty water vacuuming is insufficient	The recovery tank is full, light(E2) is red	Empty the recovery tank
	The hose is disconnected from the squeegee	Re-connect
	Vacuum assembly is clogged	Clean or check
	The squeegee is dirty, or the squeegee blades are worn or damaged	Clean and check the squeegee
	The tank cover(A2) is not properly closed, or the gasket is damaged	Close the cover properly or replace the gasket
The solution flow is insufficient	The solution filter (D3) is dirty,	Clean the filter
	The solution is empty, light(E10) is red	Full in water
	Water switch (D2) indicate “0”	Open the water switch
	The solution tank is dirty	Clean the solution tank
The squeegee leaves marks on the floor	There is debris under the squeegee blades	Remove the debris
	The squeegee blades are worn, chipped or torn	Replace the blades
Machine cannot brake	The drive motor brake is not applied	Brake bracket is stuck

USER MANUAL

WIRING DIAGRAM



NO.	WIRED ROD	NO.	WIRED ROD
1	RD1	16	BU2
2	RD2	17	PU/BK
3	RD3	18	YE/BK
4	RD4	19	BU/BK
5	BK1	20	OR/BK
6	BK2	21	GR/BK
7	BK3	22	WH1
8	BK4	23	R/B
9	PU1	24	BR/BK
10	BR1	25	RD5
11	GR1	26	BK5
12	BU1	27	WH2
13	YE1	28	BU2
14	OR1	29	BU3
15	BR2		

SIGN	REMARK	SIGN	REMARK
BT1	24VDC Batteries	EB2	USB Charging PCBA
CH1	24VDC/25A Charger	F1	Main circuit breaker
SW1	Emergency-stop switch	F2	Drive motor circuit breaker
SW2	Key switch	F3	Brush motor circuit breaker
SW3	Vacuum motor switch	F4	Brush motor circuit breaker
SW4	Dirty water level switch	F5	Vacuum motor circuit breaker
SW5	Clean water level switch	MD1	Brush motor
SW6-A	Direction switch DPDT	MD2	Brush motor
SW6-B	Direction switch DPDT	MD3	Vacuum motor
SW7	Seat switch	MD4	Drive motor
SPK1	12VDC Buzzer	KA1	Brake
YV1	Water electro valve	SQ1	Approach switch
RL1	Main contactor	SQ2	Foot pedal
RL2	Vacuum motor contactor	VR1	Speed potentiometer
RL3	Brush motor contactor	EU1	Drive motor controller
EB1	Main control PCBA	J1	External charger connector

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